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1.40, respectively). Feeding CAP at 1.5 g/d improves performance of dairy cows without affecting nutrient digestibility.

Key Words: *Capsicum* oleoresin, feed additive, feed efficiency

2505V Effects of dietary capsaicin on ruminal fermentation of dairy cows. N. T. S. Grigoletto, C. S. Takiya, M. Bugoni, R. G. Chesini, P. C. Vittorazzi Jr., A. C. de Freitas, G. Gomes da Silva, N. P. Martins, O. P. Sbaralho, and F. P. Rennó*, *University of São Paulo, Pirassununga, São Paulo, Brazil.*

Capsaicin (CAP) is an organic compound available in large amounts in fruits of pepper variants (genus *Capsicum*) and has demonstrated antibacterial properties. A study was conducted to evaluate CAP on ruminal fermentation, predicted rumen microbial protein synthesis (MPS), and apparent digestibility of DM. Four Holstein cows (32.2 ± 0.8 kg/d milk yield, 212 ± 51.1 DIM) with rumen cannulas were blocked (n = 2) according to milk yield and DIM and used in a crossover design experiment with 21-d periods, which the last 7 d were used for data analyses. Treatments were either control (CON) or CAP fed at 1.5 g/d (Capcin, NutriQuest Ltda, Campinas, Brazil) mixed with minerals. Cows were milked twice daily, and milk solids were analyzed by mid-infrared method. Ruminal digesta samples were collected on the last day of each period before feeding and every 2 h until 16 h for VFA analysis. Urine and fecal samples were collected on d 15, 16, and 17 of each period at 9-h intervals. Purine derivatives (PD) in milk and urine (allantoin and uric acid) were used to predict MPS. Samples of feeds, orts, and feces were incubated (288 h) in the rumen of cannulated cows to determine indigestible NDF, which was used to estimate fecal output. Data were analyzed using the MIXED procedure of SAS modeling the fixed effects of treatment, period, and their interactions with the random effect of animal. Ruminal fermentation data (pH, NH_3-N, and VFA) were analyzed as repeated measures modeling the fixed effects of treatment, period, and their interaction, sampling time and its interaction with treatment, and the random effect of animal. No treatment effects were detected for ruminal pH, NH_3-N, or VFA molar percentages. Total VFA concentration was similar between treatments (95.7 and 95.5 mM, for CON and CAP, respectively). Excretion of PD was similar between treatments, hence did not affect predicted MPS. Digestibility of DM was greater ($P = 0.02$) in cows fed CAP than CON (62.2 vs. 57.1%, respectively). No differences were detected in milk yield and composition. There was no evidence that feeding CAP at 1.5 g/d modulates ruminal fermentation, but CAP may increase diet digestibility.

Key Words: capsicum oleoresin, essential oil, feed additive

2506V Effects of capsaicin supplementation on apparent digestibility and physiological parameters of lactating cows during the summer. P. C. Vittorazzi Jr., G. Gomes da Silva, N. T. S. Grigoletto, A. T. Nunes, R. G. Chesini, M. Bugoni, L. V. B. de Alcantara, F. M. dos Santos, C. V. de Almeida, and F. P. Rennó*, *University of São Paulo, Pirassununga, São Paulo, Brazil.*

Capsaicin (CAP) is a phenolic alkaloid, found in red peppers, with thermoregulatory properties. This study aimed to evaluate CAP levels (Capcin; NutriQuest, Campinas, Brazil) on DMI, total apparent digestibility, and physiological parameters (rectal temperature, heart and respiratory rates, and surface temperature). Thirty-six Holstein cows (160 ± 88 DIM and 30.9 ± 7.2 kg/d milk yield) were used in a complete randomized block design experiment. Cows were blocked (n = 12) by DIM and milk yield and were allowed a 2-wk period for adaptation. Data collected during this period were used for covariate purposes. After the 2-wk period, cows received one of the following treatments for 9 wks: control (CON), or 0.75 and 1.5 g/d of CAP added to the concentrate. Samples of feeds and orts were collected daily and pooled into composite samples per wk for chemical analyses. Samples of feeds, orts, and feces were incubated in the rumen of 2 cannulated cows for 288 h to determine indigestible NDF content and fecal output. Fecal samples were collected directly from the rectum of cows for 3 consecutive days on 9-h intervals on wks 3, 6, and 9. Physiological parameters were measured twice a day (1000 and 1730 h) on the 3rd and 4th day of wks 3, 6, and 9. Data were analyzed using the MIXED procedure of SAS modeling the fixed effects of time, treatment and their interaction, and the random effect of block. Cows were housed in barns with 72 ± 4.3 temperature-humidity index. Orthogonal contrasts were used to evaluate treatment differences (CON vs. CAP; or CAP at 0.75 g/d vs 1.5 g/d). Organic matter intake was greater ($P = 0.05$) in cows fed CAP than CON (23.0, 23.6, and 24.4 kg/d for CON, 0.75 g/d, and 1.5 g/d, respectively). Cows fed CAP at 1.5 g/d tended to have greater ($P = 0.06$) DMI than those fed CAP at 0.75 g/d (26.2 and 25.3 kg/d, respectively). No treatment differences were detected on nutrient digestibility. Neither rectal temperature, surface temperature (forehead, face, and rumen), nor heart and respiratory rates were influenced by treatments. Capsaicin can increase DMI without affecting diet digestibility in cows.

Key Words: additive, capsicum oleoresin, essential oil

2507V Effects of partially replacing soybean meal with heat-treated soybean meal or corn dried distillers grains with soluble on N utilization and purine derivatives excretion. R. G. Chesini, C. S. Takiya, P. C. Vittorazzi Junior, G. Gomes da Silva, N. T. S. Grigoletto, A. T. Nunes, D. J. C. Vieira, O. P. Sbaralho, M. Bugoni, A. C. de Freitas, and F. P. Rennó*, *University of São Paulo, Pirassununga, São Paulo, Brazil.*

Feeding byproducts from the corn ethanol industry while reducing N excretion is of great interest to the dairy industry in terms of sustainability. An experiment was conducted to evaluate different protein sources on N excretion and predicted rumen microbial protein supply (MPS). Twenty-four Holstein cows (200 ± 40 DIM and 30.0 ± 3.92 kg/d milk) were blocked according to parity, milk yield, and DIM and used in a 3 × 3 Latin square design experiment with 21-d periods, and the last 7 d were used for sampling Treatment sequences were composed of: control (CON), diet containing 15.9% SBM as the main protein source; heat-treated soybean meal (HTSBM), HTSBM at 4.40% diet DM; and high-protein corn dried distillers' grains with soluble (DDGS), DDGS at 5.34% diet DM. Diets had similar CP. Cows were milked twice daily, and milk samples were collected during 3 consecutive days for N and allantoin analyses. Fecal and urine samples were collected for 3 consecutive days in 9-h intervals and analyzed for N. Fecal output was determined using indigestible NDF as an internal marker. Urine samples were analyzed for concentrations of N, allantoin, uric acid, and creatinine. Urine daily output was estimated based on a daily creatinine excretion of 24.05 mg/kg BW. Predicted MPS was calculated based on purine derivatives (PD) excretion (allantoin and uric acid). Data were submitted to ANOVA using the mixed procedure of SAS, modeling the fixed effects of treatment, Latin square, and their interaction, and period. Animal within square was considered as a random effect. Treatment differences were evaluated by orthogonal contrasts (CON *vs* HTSBM+DDGS; or HTSBM *vs* DDGS). Nitrogen intake was greater ($P = 0.026$) for cows fed HTSBM and DDGS than CON (703, 723, and 683 g/d, respectively). Cows fed HTSBM and DDGS tended to excrete more ($P \leq 0.082$) N in milk and feces CON. No differences were detected on urine N output and N utilization (as % of N intake). Treatments did not